NL INDUSTRIES/TARACORP SUPERFUND SITE GROUP
LEED ENVIRONMENTAL, INC.
124 Deborah Drive
Reading, PA 19610
Telephone: (610) 670-7310
Telecopy: (610) 670-7311

June 28, 2002

First Class Mail

Mr. Brad Bradley
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3590

RE: NL Industries/Taracorp Superfund Site; Granite City, Illinois
Operation and Maintenance Plan

Dear Mr. Bradley:

Enclosed for your review are three copies of the revised Operation and Maintenance Plan for the NL/Taracorp Superfund Site in Granite City, Illinois. The Operation and Maintenance Plan has been revised to:

- Respond to the comments in EPA's January 22, 2001 letter;
- Define the O&M activities required in remote fill areas (alleys);
- Outline future reporting requirements as specified in the Statement of Work;
- Add maps as appendices to the document to assist in defining the areas subject to O&M requirements; and
- Address various editorial changes.

Please contact this office if additional information or clarification is required.

Very truly yours,

LEED ENVIRONMENTAL, INC.

Jeffrey A. Leed
Project Coordinator

enclosures

cll/granitecitybradley.01

cc: Ms. Sandra Bron - Illinois Environmental Protection Agency
(w/enclosure, by first class mail)
Mr. Rich Wood - ENTACT, Inc. (w/enclosure, by first class mail)
Technical Committee, NL Industries/Taracorp Superfund Site Group
(w/enclosure, by first class mail)

OPERATION AND MAINTENANCE PLAN

NL/TARACORP SUPERFUND SITE
GRANITE CITY, ILLINOIS

June 2002

OPERATION AND MAINTENANCE PLAN
for
NL/TARACORP SUPERFUND SITE
GRANITE CITY, ILLINOIS

Prepared by:
ENTACT, INC.

for the
NL INDUSTRIES/TARACORP SUPERFUND SITE GROUP

June 2002

TABLE OF CONTENTS

LIST OF ATTACHMENTS

1.0 INTRODUCTION

In accordance with the Consent Decree, the Statement of Work, the Record of Decision, and the Decision Document/Explanation of Significant Differences for the NL Industries/Taracorp Superfund Site (the "site") in Granite City, Illinois, this Operation and Maintenance ("O&M") Plan has been prepared by ENTACT, Inc. ("ENTACT") on behalf of the NL Industries/Taracorp Superfund Site Group ("Group") for the United States Environmental Protection Agency ("USEPA") Region 5. ENTACT mobilized to the site on June 16, 1998 to begin remedial activities for residential lots and remote fill areas. Remedial activities were conducted by the Group at the industrial portion of the site from March 22, 1999 to February 5, 2000, in accordance with the approved ENTACT Remedial Action Workplan and the U.S. Army Corps of Engineers ("USACE") Design Specifications, as modified based on field conditions with USEPA approval.

The remedial activities for the industrial portion of the site included excavation of all soil containing lead concentrations above 1,000 mg/kg and placement of the soil on the existing Taracorp pile, consolidation and capping of the Taracorp pile with an engineered RCRA-grade cap, construction of a new cell within the Taracorp pile with an engineered RCRA-grade liner and a leachate collection system, and grading and restoration of the site. Additional restoration activities included the construction of a permanent site security fence and grading of the site to ensure that storm water runoff was directed into the appropriate drains.

In addition to the industrial property, ENTACT excavated lead-contaminated soil in residential areas and lead-contaminated soil and fill materials in remote fill areas. The excavated materials were either disposed off-site or placed into the Taracorp pile before the pile was capped as part of remedial activities for the industrial portion of the site. ENTACT completed remedial activities at 770 residential lots and 32 remote fill areas. The remote fill areas included properties in the Eagle Park Acres subdivisions and various Granite City residential properties where battery case materials containing lead were used as fill and paving material in low areas. The remote fill areas also included most of the alleys in Venice Township (south and southeast of Madison), Watson Alley in Eagle Park Acres, and Slough Road in Madison which were paved with asphalt.

2.0 PURPOSE AND OBJECTIVES

This O&M Plan has been prepared for the industrial portion and remote fill areas of the site by ENTACT on behalf of the Group. The intent of this plan is to describe the post-remediation operation and maintenance activities for the site in accordance with the Consent Decree, the Statement of Work, the Record of Decision, and the Decision Document/Explanation of Significant Differences.

The purpose of the O&M plan is to provide for the inspection and maintenance of the remediated property that is essential in maintaining the long-term effectiveness of the implemented remedy. The operation and maintenance activities that must be performed for the industrial portion of the site (Attachment 1) to assure the remedy remains effective over time include the following:

- Inspection of the Taracorp pile cap, for assessing the need for repair or replacement of cover material to maintain the integrity of the cap;
- Inspection and trimming of the native grasses and wildflowers to maintain the diversity of the native cover materials;
- Inspection of the concrete drainage channels around the perimeter of the pile to maintain proper drainage from the pile;
- Inspection and maintenance of the access road and drainage ditches;
- Inspection of the six-foot perimeter fence and performance of all necessary repairs to ensure that access to the site is controlled;
- Inspection and maintenance of the leachate collection system; and
- Monitoring of the leachate levels in the leachate collection system and removal and disposal of accumulated leachate as necessary.

The operation and maintenance activities that must be performed for the remote fill portions of the site to assure the remedy remains effective over time include inspecting and maintaining the Venice alleys, Watson Alley in Eagle Park Acres, and Slough Road (Attachment 2).

The remainder of this document presents the following:

- Section 3.0 - Description of the O&M activities including scope and frequency of inspections, and identification and performance of necessary repairs;
- Section 4.0 – Reporting requirements.

3.0 OPERATION AND MAINTENANCE ACTIVITIES

The O&M Plan has been designed to include all necessary tasks that will be required to maintain the effectiveness of the remedy. The re-graded and capped Taracorp pile consists primarily of an original waste pile, generated during former battery recycling operations at the site, that contains slag, battery cases, and other lead-containing debris. Lead-impacted soils and investigation debris that originated from remedial activities at the site were consolidated onto the pile before the pile was capped during remedial activities. This material was deposited directly on the ground during former site operations. Therefore, the more rigorous leachate and/or gas monitoring and maintenance requirements typically associated with capped municipal waste landfills containing more heterogeneous buried wastes are not applicable.

The primary focus of the O&M Plan for the industrial portion of the site is to provide the necessary inspections and repairs needed to maintain the integrity of the cap and diversity of the native plant cover vegetation and to provide inspections of the concrete drainage channel system, which conveys storm water runoff away from the pile. Other O&M tasks related to the industrial portion of the site include inspections of leachate levels in the leachate collection system, removal of leachate as necessary, maintenance of the fence to control site access, inspections of the overall site grade to ensure the site continues to drain properly, and maintenance of the access road. In general, inspections will be conducted on a quarterly basis for the first year and biannually for the second year.

The results of the field inspection for the industrial portion of the site will be recorded on the field inspection form included in Attachment 3.

The primary focus of the O&M Plan for the remote fill portions of the site is to provide for the necessary inspections and repairs needed to maintain the caps (asphalt) constructed over the Venice alleys, Watson Alley in Eagle Park Acres, and Slough Road. Inspections will be conducted on a quarterly basis for the first year and biannually during the second year. The results of the inspections for the remote fill portions of the site will be documented in a memorandum that will include at least the following information: name(s) of inspector(s); date of inspection; areas inspected; results of inspection; and the need for maintenance activities as appropriate.

3.1 INDUSTRIAL SITE - TARACORP PILE CAP INSPECTION

3.1.1 Cap Integrity

Inspection of the Taracorp pile cap will include a visual inspection of the entire cap area for cracks or fissures, subsidence or heaving in the grade, and any signs of erosion. At a minimum, the inspector will look for evidence of ponding, wet spots, leachate seeps, or soft subgrade on the landfill cap. The stability of the slope will be noted by checking for areas where sliding or movement of the cap components may have occurred. Any repair that is observed to be necessary as a result of the inspection will be performed as soon as possible.

3.1.2 Vegetative Survey and Upkeep

Inspections of the vegetative cover will be conducted to ensure the health and diversity of the native grasses (annual rye, turf-type tall fescue, Kentucky bluegrass) and wildflowers that comprise the cover material. The native grasses develop extensive root and rhizome coverage in the upper few inches of soil early in their growth to provide erosion control. The wildflowers (forbs) provide broadleaf cover and raindrop interception and consequently reduce runoff. Therefore the visual inspection will entail ensuring that this diversity is maintained and identification of colonies of trespassing or competing weeds or vegetation that may develop deep root systems will be removed with localized use of an approved herbicide (i.e., Rodeo) that is applied in accordance with the manufacturer's labeling and instructions.

Mowing will be used as the preferred method for prairie grass cover management. For the first two years, mowing will be conducted, as necessary, in spring when about two thirds of the ground surface is expected to be shaded and weeds are present and again in the late fall after the wild flowers have finished blooming to allow for the spreading of seed. The mower will be set on a high setting and the planting will be maintained at a minimum height of about eight inches. Mowing will not be conducted during drought conditions to prevent damaging the biomass of the grasses and forbs.

If visual inspection indicates that the planting appears weedy in mid-summer, mowing will be repeated to a minimum height of eight inches. Mowing will not be limited to only early spring as this may reduce the growth of native cool-season grasses in the planting mix. Fall mowing, with removal of the resulting hay as needed, will be used to reduce litter build-up that can depress growth of grasses and forbs. Hay will be raked to the sideslopes for baling. Equipment with flotation tires will be used as needed, on the steeper slopes.

After the second year, the mowing management program will be examined to determine the long-term mowing frequency.

3.2 INDUSTRIAL SITE - CONCRETE DRAINAGE CHANNEL INSPECTION

The landfill storm water management system consists of three components: vegetation on the pile for erosion control, a retention pond for the collection of runoff from the Taracorp pile, and a perimeter channel to collect storm water from all sides of the pile.

The retention pond is located on the eastern side of the pile and is approximately 60 feet wide by about 440 feet long. Water in the pond flows toward the southern end, where a pre-cast concrete drain conveys the water to the municipal sewer system. A layer of large stone surrounds the concrete drain. The retention pond is designed to accommodate a 25-year storm event.

The drainage channel runs around the perimeter of the pile in all areas not abutting the retention pond. The drainage channel consists of concrete measuring six inches deep by two feet wide. It is designed to carry the flow anticipated by a 25-year storm event, based on historical weather data from the Granite City area. The channel empties into the retention pond on both the north and south ends.

Inspections of the concrete drainage channel will be conducted to identify cracks or breaks that will impede the proper flow of storm water and to ensure the channel is clear of any debris or obstructions. If areas of erosion are observed, these areas will be repaired by either the application of gravel or other coarse grained material or the addition of fill and seed as needed, depending on where the eroded areas are located.

3.3 INDUSTRIAL SITE - LEACHATE MANAGEMENT

The leachate management system consists of a five-foot by five-foot sump on the cell floor installed during cell construction. The sump serves as the collection point for the leachate collection system. After the geosynthetic layers were installed and before any contaminated material was placed in the new cell, a vertical leachate collection pipe was installed. The pipe is four inches in diameter with half-inch perforations three feet from the pipe's bottom. The bottom of the pipe was capped to prevent damage to the liner materials that lay beneath and to facilitate pumping of the leachate. Coarse stone aggregate was placed in the sump around the pipe. A layer of geotextile was then installed on top of the coarse stone aggregate to prevent it from mixing with the protective sand layer that was installed over the geosynthetics.

Though no significant leachate generation is anticipated from the Taracorp pile, leachate levels in the collection sump will be measured to ensure the levels do not rise above the top of the sump. If leachate is determined to require pumping and disposal, a leachate sample will be collected through the access standpipe using a disposable bailer and analyzed for the eight RCRA metals and any other parameters associated with disposal requirements.

The protective casing for the riser pipe as well as the cap and lock will be inspected and repaired or replaced if necessary.

3.4 INDUSTRIAL SITE - PERIMETER FENCE MAINTENANCE

The six-foot-high chain link perimeter fence will be inspected quarterly for the first year and biannually the second year to ensure that site access is restricted and gates remained locked. The fencing will be inspected to determine if there are any breaches, holes, erosion rills, or animal burrows beneath the fence. Access gates will be inspected and maintained including oiling the hinges and replacing worn locks. Any necessary repairs will be completed as soon as possible following the inspection.

3.5 INDUSTRIAL SITE - ACCESS ROAD MAINTENANCE

Inspections of the access road will be conducted to identify areas of settlement, erosion, or deterioration. Necessary repairs will be performed by spreading and compacting additional gravel material in areas where it is required to maintain the original constructed grade.

3.6 REMOTE FILL AREAS - COVER MAINTENANCE

During the completion of remedial activities at the site, the Venice alleys, Watson Alley in Eagle Park Acres, and Slough Road were paved with 2 to 2.5 inches of heavy-duty asphalt. Areas to be paved were first prepared by removing trash, debris, and structures that would inhibit paving activities. The areas were sprayed with water to minimize dust generation and graded, if necessary, with a grader in preparation for paving. The preparation of the subgrade provided a level and firm foundation for the asphalt pavement. A primer was applied to the subgrade followed by asphalt, which was compacted to meet the desired thickness. Maps of Watson Alley in Eagle Park Acres, Slough Road, and the Venice alleys that were paved by ENTACT are shown on the drawings provided in Attachment 2.

Inspection of the asphalt covers in the alleys will include a visual inspection of the entire area for significant cracks or fissures, presence of vegetation, and signs of crumbling or other surface deterioration. Significant cracks are defined as fully penetrating the existing concrete surface with a width greater than one inch. Any repair that is observed to be necessary as a result of the inspection will be performed as soon as possible in general accordance with Illinois DOT specifications.

4.0 REPORTING

A report describing the results of the inspections and details of any required repairs and maintenance activities will be submitted to the USEPA after completion of the inspection.

The report will contain the following:

- Inspector's name, title, and date of the inspection;
- A brief narrative of the inspection results, including the completed inspection form and a memorandum describing the inspection of the alleys;
- A description of any maintenance activities that are planned;
- A detailed discussion of all required repairs needed to maintain the integrity of the cap and the drainage channels or other features of the site;
- Analytical results, if any, associated with leachate analysis and disposal manifests (if the leachate is transported off-site for disposal); and
- Schedule for follow-up activities.

During the operation and maintenance phase of work and in accordance with USEPA's Statement of Work for the site, the Group's project coordinator will submit semiannual progress reports to the USEPA to document the results of O&M activities (in addition to the inspection reports described above). The semiannual progress reports will replace the monthly progress reports that have been submitted by the Group during the remedial action phases of work at the site.

ATTACHMENT 1

INDUSTRIAL SITE, INCLUDING TARACORP PILE

NL/TARACORP SITE

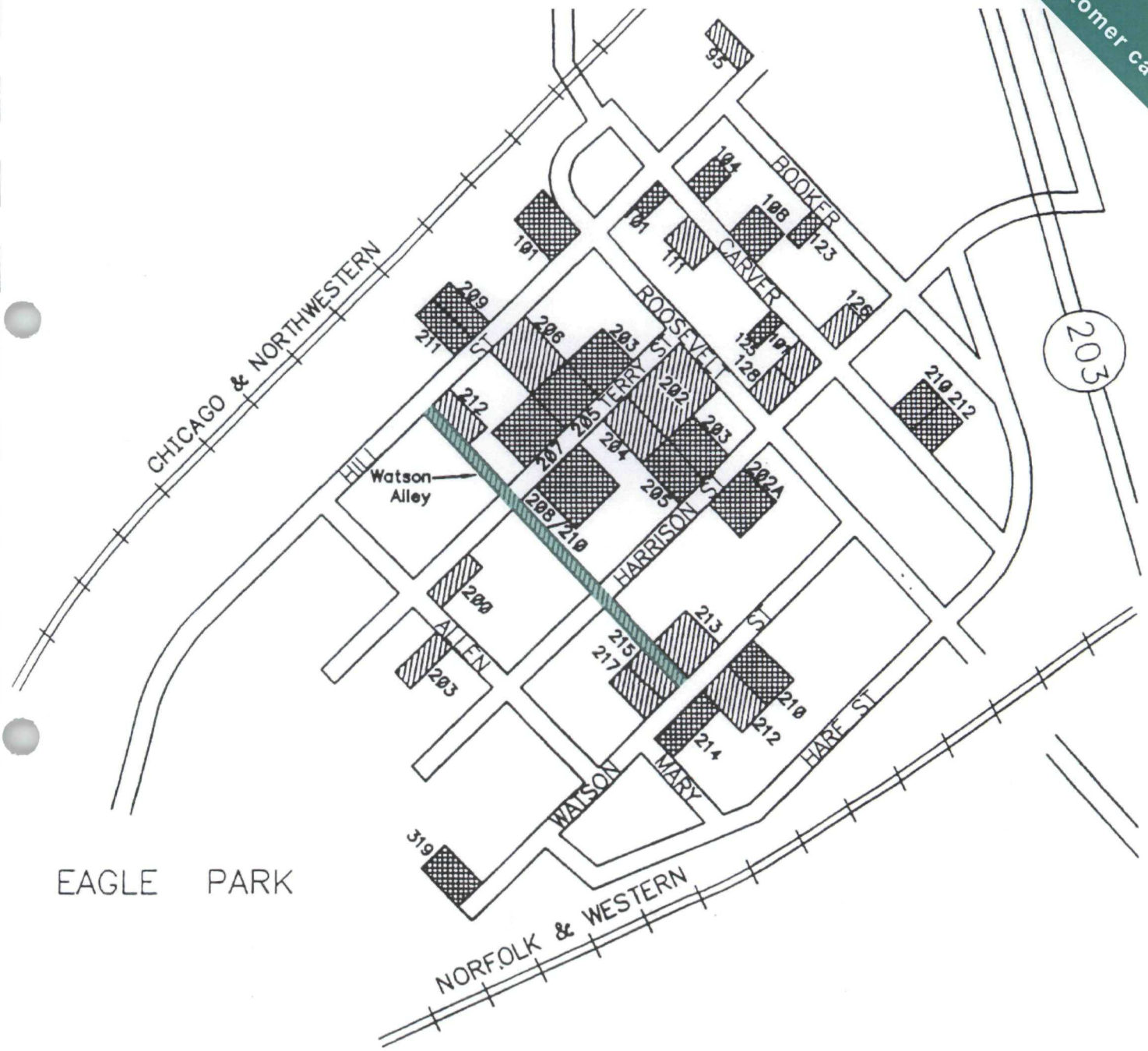
Industrial Site, Including Taracorp Pile
May 2000

ATTACHMENT 2

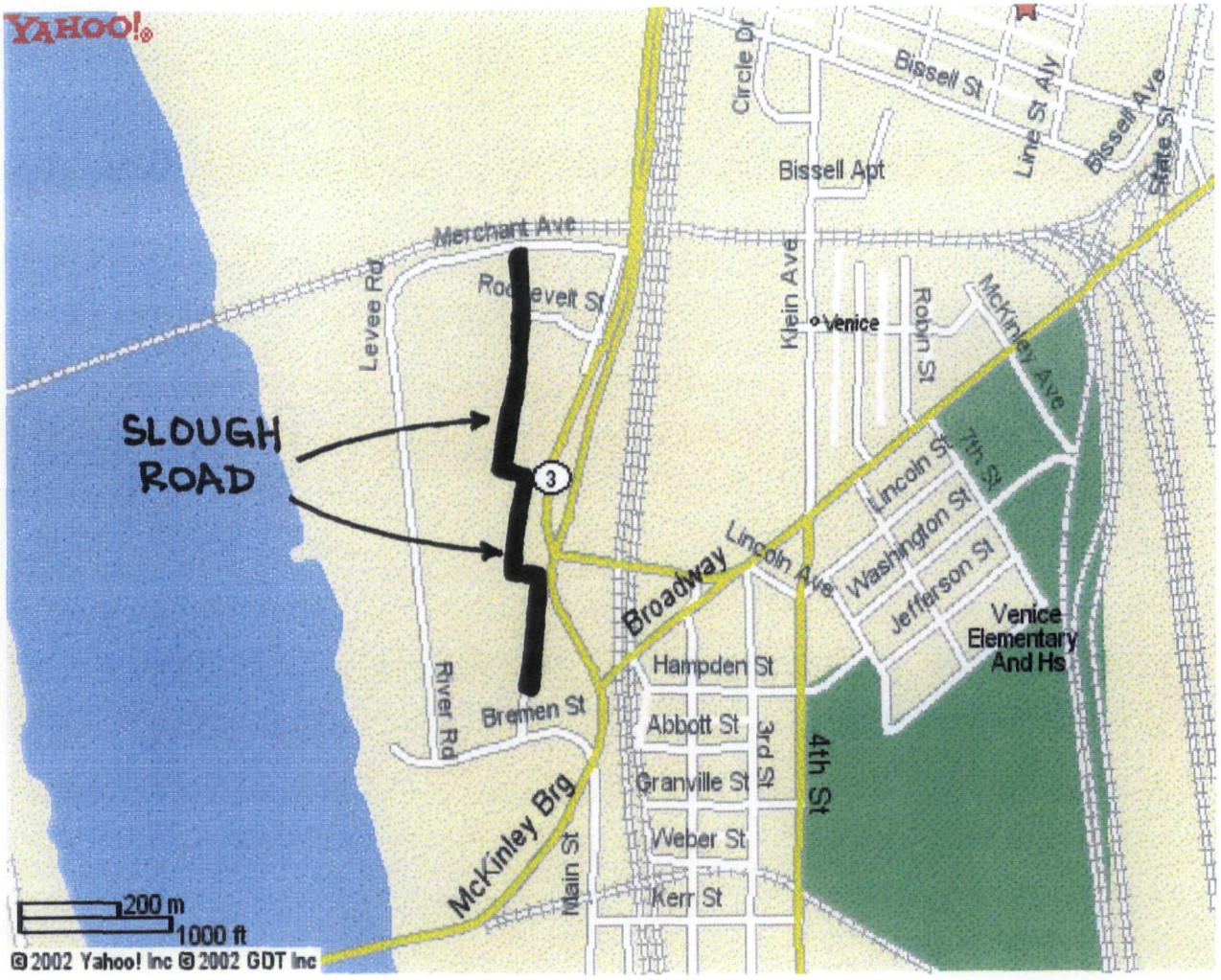
WATSON ALLEY, SLOUGH ROAD, AND VENICE ALLEYS

ENTACT

Leading the nation in customer care.



ALLEY PAVED BY ENTACT



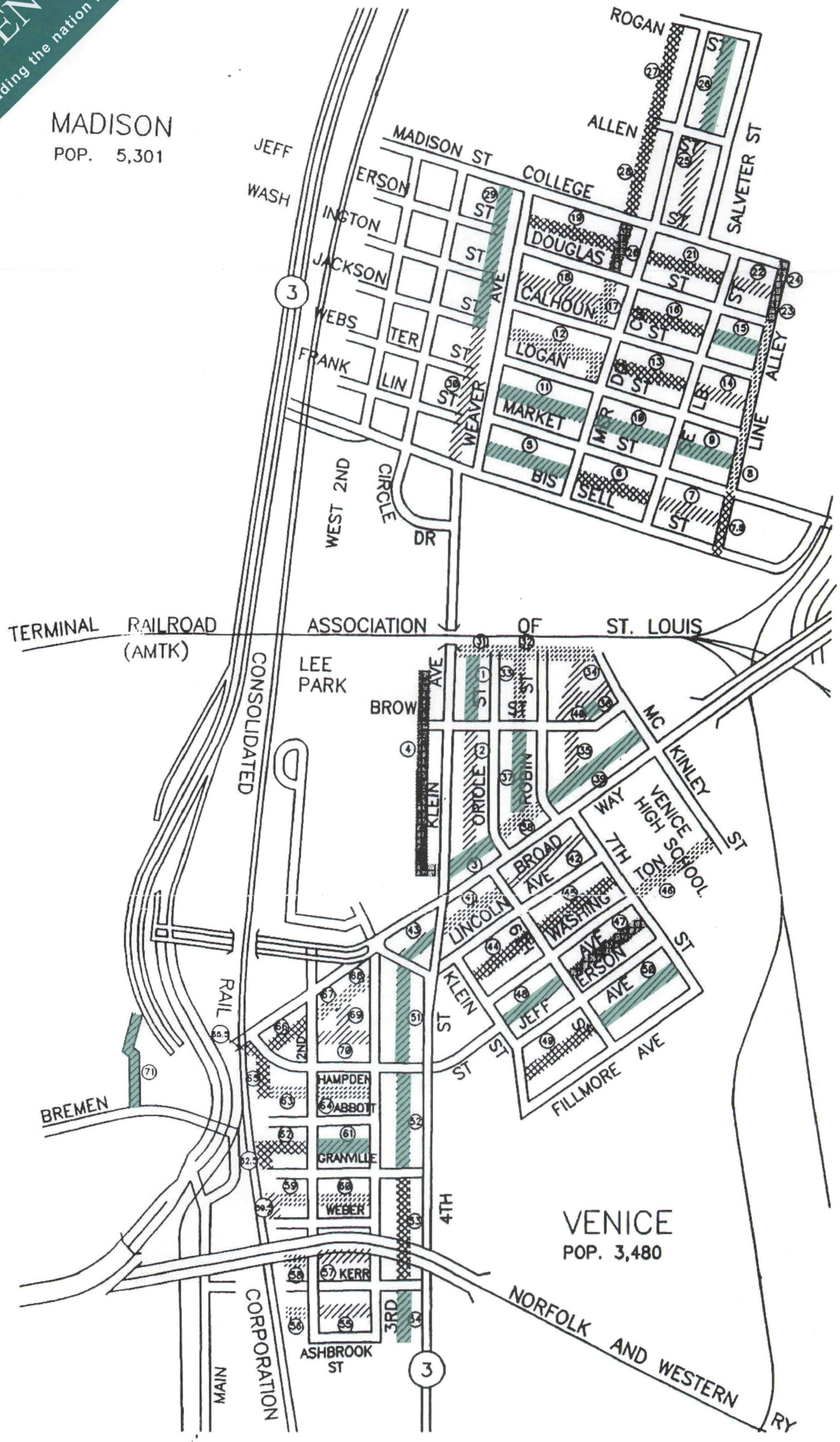
Approximate Location of Slough Road
Madison, Illinois

ENTACT

Leading the nation in customer care.

ALLEY PAVED BY ENTACT

MADISON
POP. 5,301



ATTACHMENT 3

FIELD INSPECTION FORM

NL/Taracorp Superfund Site
O & M Inspection Log

Inspector's Name:_____ **Date of Inspection:**_____

Site Structure	Inspected (Yes/No)	Inspection Observations	Maintenance Work Required or Performed
Security Fence:			
• Gates/locks secure and operative			
• Evidence of rust, cuts, deterioration			
• Evidence of unauthorized entry			
• Burrowing or tunneling under fence			
• Damaged barbed wire			
• Comments			
Access Road:			
• Evidence of settlement or deterioration			
• Comments			
Landfill Cover – Vegetation			
• Establishment of grass from initial seeding			
• Adequate growth of vegetation			
• Evidence of stress			
• Presence of trees/shrubs			
• Need for mowing/maintenance			
• Comments			
Landfill Cover – Erosion			
• Evidence of erosion			
• Indicate areal extent and location			
• Comments			
Landfill Cover – Settlement			
• Evidence of settlement			
• Indicate areal extent and location			
• Comments			

Site Structure	Inspected (Yes/No)	Inspection Observations	Maintenance Work Required or Performed
Landfill Cover – Cracks			
• Evidence of cracks			
• Indicate areal extent and location			
• Comments			
Landfill Cover – Bulges			
• Evidence of bulges			
• Indicate areal extent and location			
• Comments			
Landfill Cover – Ponding			
• Evidence of ponding			
• Indicate areal extent and location			
• Comments			
Landfill Cover – Seeps			
• Evidence of seepage (leachate)			
• Indicate areal extent and location			
• Comments			
Landfill Cover – Slope Stability			
• Evidence of sliding			
• Indicate areal extent and location			
• Comments			
Leachate Management System			
• Riser pipe and locks			
• Leachate levels in sump			
• Necessary sampling activities			
• Necessary leachate disposal			
• Comments			
Concrete Drainage Channel			
• Evidence of cracks or obstructions			
• Areas of erosion			
• Comments			

Site Structure	Inspected (Yes/No)	Inspection Observations	Maintenance Work Required or Performed
Asphalt Covers - Integrity			
• Evidence of broken asphalt or fissures			
• Indicate areal extent and location			
• Comments			